Report to

WA State Office of Financial Management

Grants, Contracts and Loans Feasibility Study

Business Case and Full Narrative of Alternatives and Recommendation

Washington State *Roadmap*

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1. INTRODUCTION

1.1. Purpose

The purpose of the Grants, Contracts and Loans Management (GCLM) Business Case document is to describe the GCLM business environment for the participating agencies and the case for implementing a system that will provide a GCLM "workbench" solution for them. We have described the business problem, objectives and opportunities, constraints on the project, functional and non-functional requirements for the solution, and the evaluation criteria to be used to evaluate alternatives. This document also describes the alternative solutions, their fit to requirements and their costs, benefits and risks. Finally, it analyzes the alternatives information and recommends a solution.

1.2. Background

The Washington State Department of Ecology must replace its aged Contracts & Grants Management System that processed transactions totaling $392 million in the 2003-2005 biennium. OFM has proposed that Ecology's replacement be directed into an enterprise system for Washington State to be used by multiple agencies for grants, contracts, and loans management. Benefits are avoidance of duplicative systems costs among agencies, cross-agency monitoring of projects, and improvement of core business practices. OFM is leading the effort, joined by the Departments of Ecology (ECY) and Community, Trade and Economic Development (CTED) as the first customers of the new system. An enterprise system is also mission-critical to CTED; it distributes over $1.2 billion in new and existing contracts and loans through manual procedures and spreadsheets and seeks improved business practices and information systems.

Monies spent toward such systems provide a unique opportunity to address not only ECY's and CTED's needs but also achieve:

- Avoidance of duplicative system' costs among agencies.
- Improved monitoring of projects. Agencies with programs for environmental quality could share project information, as recommended in the 2001 report by the Joint Legislative Audit and Review Committee, "Investing in the Environment: Environmental Quality Grant & Loan Programs Performance Audit."
- Improved management of many types of contracts and of loans.
- Automated fiscal processes to achieve efficiencies in the payment, receipt and accounting for funds.
- Electronic access to those applying for grants, requesting payments, or seeking information.

The Proposed System will be a *Roadmap* Business Initiative. The *Roadmap* is a multi-year effort to improve and integrate the state's financial and administrative processes and information systems (More information is available at http://www.OFM.WA.GOV/Roadmap). As a *Roadmap* business initiative, this Enterprise Grants, Contracts & Loans Management System will be an early adopter of three key *Roadmap* approaches:

- **Business process modeling**. Business process modeling is being conducted to document the "as-is" business processes and the "could-be" future model. The "could-be" model will serve as a starting point for the feasibility study and will represent a common understanding of the best practices to be implemented by the State. The "could-be" model will also identify key policy changes that may be necessary, key common information requirements, and establish the value proposition that can be achieved. The "could-be" models related to grants, contracts and loans management are recently available.
- **Integration architecture**. A common integration architecture for the State's financial and administrative systems is being developed under the authority of the state's Enterprise Architecture committee. This architecture will consist of principles, policies, reference models and standards. The integration architecture will be designed to address the following questions:
  - What is the technical architecture that will allow core financial and administrative systems and business processes to be implemented incrementally with confidence that all of the pieces will fit together as they come on-line?
  - What are the clear and consistent guidelines for central systems providers and line agencies that allow core financial and administrative systems to fit within the State's current environment of common and agency "shadow systems"?
  - How can financial and administrative systems be constructed to allow business process solutions to be composed of agency unique and central, common components?

This architecture will be under development at the time of the feasibility study. The feasibility study will take into account the integration architecture direction and requirements as known at that time.

Performance measurement. *Roadmap* business initiatives provide the opportunity to apply Government Management Accountability and Performance principles to the state's "back office" business processes. The performance indicators for grants, contracts and loans management will be available in early January 2006 as part of the business process modeling described above.

This feasibility study will allow OFM, ECY and CTED to plan for an enterprise solution for grants, contracts and loans management (within the scope of this project) by documenting:

- The requirements for an enterprise grants, contracts and loans solution
- The business case for proceeding with such a solution
- The alternatives – and costs and benefits – for a solution and a recommended solution

And, for the recommended solution:

- A conceptual design
- A work plan
- A risk management plan

1.3. Scope

In terms of functionality, this project addressed these areas listed in the work request:

- For Grants Management, the study will address the functions of applying for grants, evaluating and awarding grants, daily grants/project management, payments, closures, and reporting/queries.
- For Contracts Management, the study will address the functions of documenting and establishing contracts, daily contracts management, payments, closures, and reporting/queries.
- For Loans Management, the study will address the functions of accounts payable for loans (It is expected that other systems will address the other functions of loans management.)

Also:

- The application for a grant by a recipient is in scope.
- The only Accounts Payable functionality in scope is whatever is needed to accommodate grants, contracts or loans as one process. The piece implemented for this system may be replaced when enterprise financial solutions are implemented. (A/P is the first thing the Roadmap will address next biennium.)
- Only sub-grants are in scope (page 2 of the grant “to be” process model).

1.4. Approach

Information for the business case was drawn from a variety of sources including:

- Previous requirements studies for CTED and ECY.
- Requirements interviews.
- Current Roadmap products, including the Grants and Loans Value Proposition document.
- Vendor product research.
- Best practices, as learned from experience and documented in Gartner studies.
- Vendor information.
- Information from ECY, CTED and OFM staff.

Project team members consolidated information from all these sources in the light of the requirements previously documented and analyzed each alternative. Alternatives were investigated for:

- Anticipated fit/gap
- Projected costs
- Anticipated benefits

Alternatives were documented in a Business Case document that served as the Preliminary Narrative of Alternatives and Emerging Recommendation, which OFM needs complete by February 17, 2006. This document is a complete version and an update of that preliminary one.

1.5. Sources

Sources for information in this document include:

CMS Software Requirements Specifications, CTED, June 2005: contracted study with seven appendices, summarizing findings on the requirements for a contract management system for CTED.
CMS Housing Trust Fund Storyboard, CTED, November 2005: contracted study with requirements for the Housing Division, including sample screen designs.
Contracts, Grants and Loans Project Preliminary Requirements Analysis, ECY June, 2005: contracted study with future process flows and high level requirements.
Roadmap publications on the website at: http://www.ofm.wa.gov/roadmap/default.htm. Documents include Grant Management Value Proposition, version 0.6, February, 2006: a description of the "to be" processes for grants and loans and the potential value in harmonizing common business processes.
Washington State Enterprise Architecture Program Integration Architecture Initiative Charter, EA Committee Document version 1.3, December, 2005: Description of issues to be addressed by the statewide enterprise architecture initiative, a list of the Documenter Team, and initiative timeline.
Strategic Plan 2007 - 11, Office of the Interagency Committee for Outdoor Recreation (IAC), January, 2006: description of programs and outcomes the PRISM system supports.
Contracts Database User Guide Draft 2.3, L&I, January, 2006: draft of user manual for Contracts Database system used by L&I Contract Office staff.
Software Accessibility Requirements, June 2005: 5-page document developed by OFM Information Services staff.
WA State Office of Financial Management Grants, Contracts and Loans Feasibility Study Definition of Requirements, February 2006 (includes all interview notes)
Industry research conducted through National Grants Management Association (NGMA), www.ngma-grants.org

The National Grants Partnership (NGP), www.thengp.org Grants.Gov, www.fedgrants.gov Forrester Research, Inc, www.forrester.com The Gartner Group, www.gartner.com Information Age Associates, www.iaa.com
SAP Public Sector Implementations research including North Carolina Department of Transportation, BSIP, BWWI State of Arkansas Office of Budget, AASIS State of Pennsylvania, IES: Imagine PA Erie County New York University of Kentucky, IRIS Texas State University, FASTrack
Toronto City Council Audit Committee Report No. 1, Clause No. 9a, May 2003: review of the implementation of SAP financial and human resources/payroll information systems.
Office of the Controller of New York, CAS Redesign and FMS Integration Project, March 2002: Best practices and lessons learned from the assessment of comparable state financial management system implementations.

1.6. Relationship to Other Deliverables

The Business Case and Recommendation document was made possible by work done in gathering GCLM requirements and material for the Preliminary version of this document. This document built on those and, in turn, was built upon in all subsequent documents:

- The Identification and Analysis of Alternatives and Full Recommendation Narrative document used the high-level option analysis and preliminary recommendation to determine which options to analyze in further detail.
- The Conceptual Design explored further the anticipated user experience for the recommended solution and described and illustrated the anticipated user interface and solution architecture.
- The Work Plan laid out the steps likely to be needed to implement the recommended solution and the issues and our recommended approach to them.
- The Risk Plan documented the risks in implementing the selected solution in a risk management plan that included the risk type and strategies for mitigation.

2. BUSINESS PROBLEM OR OPPORTUNITY DESCRIPTION

2.1. Business Issues and Objectives

The agencies (CTED and ECY), the external clients/customers (citizens and other business entities), and the State all face business issues and challenges with the current environment for sub-grants, contracts and loans management. These include:

Agencies' Issues

1. The business of managing contracts, grants and loans is a paper-based, labor-intensive exercise for both agencies and their customers.
   - Collaboration is required between headquarters, regional staff, local governments, other agencies and the public.
   - A tremendous quantity of paper documents gets created, routed and tracked manually, resulting in inconsistencies in the way the business is transacted within the agency and its with customers.

2. Ecology's existing Contracts, Loans and Grants Payable (CGP) System, created over 12 years ago, has limited functionality. The extended functionality that was originally targeted to be delivered in Phase 3 of the system development was not able to be completed. This resulted in the system having limited value to the program areas.

3. The technology that was used to create the CGP System is obsolete and difficult to support.
   - It is anticipated that at some point it will not be supportable at all, due to incompatibility with contemporary operating systems and programming tools.
   - Although the technology choice was appropriate at the time of selection, there has been significant evolution since then, including redefinition of Ecology's technology direction and IT operating principles.
   - Additionally, the integrity of the data is compromised. Frequently, the CGP System requires "back door" fixes to correct data issues. As a result the information in the system cannot be used to reconcile with data in other systems such as AFRS and may affect the integrity of audit trails.

4. The lack of standardized, controlled business rules and alerts increases risks of sub-grant overpayment or non-compliance.

5. The lack of standardized, controlled business rules and alerts leads to persistent Auditor's findings.

6. The lack of connection to performance standards hampers the tracking of results. Performance of recipients should be in alignment with expectations of the Government Management, Accountability and Performance (GMAP) initiative.

7. Although the State's financial system, AFRS, provides accounting services, it does not track agencies' agreements.

8. There is a proliferation of "shadow systems" in order to supplement the available functionality of the current systems, creating "silo" solutions and data.
   - Silo solutions often have no backup processes or staffing in place.
   - These shadow systems require multiple data entry, are inconsistent across the agency and make agency-wide reporting impossible.
   - They also make it impossible to take an enterprise approach to agreement management and agreement information.

9. Interfacing to other systems is primarily manual. There are many systems that use agreement information, including AFRS, funding source systems and agency systems.

Clients/Customers (external entities such as citizens)

10. Difficulty in finding information about what funding is available for what purposes and who is eligible to apply

11. Different processes, application forms, reporting forms, requirements, and contracts for every agency and program.

12. Lengthy and inaccessible application processes.

13. Too much time and effort spent filling out forms and making corrections.

State

14. Difficulty in reporting statewide achievements and statistics, such as total grant dollars received and distributed to whom, where, and for what.

15. Excessive diversity across agencies and programs.

16. Ineffective coordination of related programs across agencies.

17. Time-consuming and error-prone paper-based processes.

18. Too much reliance on fragile desktop tools and agency silo systems, not integrated to statewide financial systems.

2.2. Business Opportunities

There are significant opportunities for improvements in each of the business issue/challenge areas listed in the previous section. A system that provides agreement stakeholders a consistent and rules-based source of information will help not only the administration of agreements, but also those who need agreement information in order to plan, budget and report on agency goals, programs and projects, as well as the public, who are the ultimate beneficiaries of grant and loan programs.

Identified business opportunities for CTED and ECY include:

- Improved workflow and business processes through adoption of best practices under a common framework.
- Reduced risks through standardized, controlled contract content.
- Reduced errors through timely alerts during the contract management life cycle.
- Performance management, in alignment with expectations of the Government Management, Accountability and Performance (GMAP) initiative.
- Aid planning, budgeting and accountability.
- More timely compliance reviews.
- Improved audit compliance.

Some of the business opportunities identified by the OFM Roadmap project team as stated in the Grant Management Value Proposition dated 2/6/2006 and included here for reference are:

- Empower potential recipients to find and apply for the funding needed to accomplish projects that deliver real value to and on behalf of citizens.
- Facilitate exchange of information to promote knowledge sharing and collaboration across grant making agencies.
- Provide visibility into the entire sub-grant management process from beginning to end.
- Make it easier, faster, and less costly to prepare, submit and review grant applications, monitor projects, and process payments.
- Provide a rich source of project and financial information for strategic planning, benchmarking, performance-based budgeting, proactive management of grant programs and responding to ongoing requests from legislators, executive management and program staff.

2.3. Constraints

Solution constraints include constraints on scope, architecture, implementation, and support:

Scope

1. This feasibility study covers only sub-grants to recipients. It does not cover grant money sent to the State.
   - Roadmap Enterprise Processes. The Roadmap project has identified common processes for handling sub-grants and loans and contracts.
   - The sub-grant, contract and loan system requirements of Washington State must meet core requirements and accommodate agency-specific requirements.
2. The solution must be able to store GIS coordinates and be compatible with systems that can generate GIS coordinates.

Architecture

3. The Department of Information Services has been developing an architecture that will facilitate enterprise solutions across the state. The selected solution must:
   - Enable the statewide enterprise architecture direction.
   - Must meet enterprise security standards.
4. The OFM Enterprise Roadmap Project has identified common financial and administrative processes for handling sub-grants and loans and contracts. The system must:
   - Support those processes and allow "unplugging" components that provide services that will be provided by an enterprise financial system.
   - Avoid tight integration of the components in the Enterprise Resources band. If any of their functionality is included in the solution, it should be loosely coupled.
5. OFM has set its architecture standards and direction. The solution must accommodate and further them.
6. The CGL solution will use OFM's Enterprise Reporting system (Business Objects) for its management/enterprise reports.

Implementation

7. Funding and staff positions for implementing the system are limited. The first release must be feasible within a $3.1 million budget.
8. Implementation approach:
   - The solution must be able to be implemented incrementally.
   - This is the first time a team has been formed to implement a Roadmap system. The plan must include time to build team processes and strong team leadership.
9. It will be very important to alert agencies to the likely impact on them and the information needed from them to implement a new system.

Support

10. The solution should consider the State's current investment in SAP.
11. Ongoing costs must be anticipated. Agencies will use the system if the cost is reasonable.
12. OFM staff will have to support the system, including a product manager (for training, documentation, decisions on functionality), help desk (for help, questions), a technical specialist, a tester, and a project manager.

2.4. Functional Requirements

The requirements for a solution were expressed in the context of use cases in the Definition of Requirements document. The list of use cases is reproduced here. Because this document is a preliminary business case and recommendation, the solutions have been compared to the requirements at a use case level.

Use Case	Description
1. Advertise Sub-Grant	When grant money becomes available for sub-grants, state program staff must advertise its availability to potential applicants and maintain notification information. This may be on the Internet, email notifications, mailings or public presentations, or a combination of these.
2. Publish Sub-Grant Application	Each sub-grant may have a unique application or may share an application with another sub-grant or group of sub-grants. The application must be available with the sub-grant advertisement.
3. Publish Sub-Grant Evaluation Criteria	Each sub-grant may have unique evaluation criteria or may share an evaluation criteria with another sub-grant or group of sub-grants. The criteria must be available with the sub-grant application.
4. Set up Evaluation Workflow	Evaluation of sub-grant applications may involve many different people and processes inside or outside of state agencies and any one may be unique or like others.
5. Apply for a Grant	An individual or representative of an organization fills out an application for a sub-grant and submits it as instructed. Application may be on-line or on paper.
6. Evaluate Application	Appropriate state agency program staff will receive, process/decide and pass on all applications, according to the evaluation workflow for the

Use Case	Description
	particular sub-grant. Includes preliminary review for completeness and draft award list.
7. Award Decision	Appropriate state agency program staff will select and award the sub-grant to a recipient based on evaluations and draft award list.
8. Set Up/Change Agreement Info, Terms and Conditions	Once the recipient has been decided, state agency program staff will set up the agreement in the new system by entering facts about the agreement.
9. Set Up/Change Agreement Schedule	Most agreements will involve a schedule that must be followed for compliance. State agency program staff will set and maintain the schedule for each agreement, which may be unique or like others. Includes advance notification of schedule due dates.
10. Set Up/Change Agreement Budget	All agreements will involve a budget that agrees with the budget of the funder. State agency program staff will set and maintain the budget for each sub-grant, which may be unique or like others.
11. Set Up/Change Agreement Workflow	Maintaining agreements will involve workflows, such as routing for approval and signatures, to assure compliance with terms of the agreement and sound fiscal policy. State agency program staff will set and maintain the workflow for each agreement, which may be unique or like others.
12. Amend an Agreement	Formally amend an agreement when certain terms or conditions change.
13. Monitor Agreement	Track an agreement through its life to ensure all terms and conditions are being followed.
14. Report Progress	The Recipient will report progress at pre-defined intervals and in pre-defined formats.
15. Report to Funding Source	State agency program staff report to the funding organization at pre-defined intervals and in pre-defined formats.
16. Request Information on Agreement(s)	Many people, state staff and individuals and organizations, need information on agreements, both individual and summary /statistical, reports and queries, selected by a highly variable set of criteria, including geographical and geopolitical area.
17. Request a Payment	The Recipient will request payment when certain terms of the agreement have been met.

Use Case	Description
18. Process a Payment Request	State agency staff evaluates the Recipient's request for payment and send approved requests to fiscal staff for payment.
19. Process a Financial Transaction	State program staff or fiscal staff who find discrepancies will adjust the financial records of an agreement. Includes all encumbrances, encumbrance liquidations, estimates of biennial carryover, warrant cancellations and reissues, refunds and reconciliations with AFRS general ledger.
20. Evaluate/Inspect/Audit a Grant	Staff from within or outside the agency administering the business program may inspect and evaluate the work of a recipient or audit the records of an agreement.
21. Close Out Agreement	At the end of an agreement, final terms must be met and its records closed.
22. Send Information To/From AFRS	Accounts Payable (A/P) information must be sent to AFRS and AFRS will send acknowledging information to the new system.
23. Make Information Available to Other Systems	Make information available to other applications in a standard format.
24. Deleted	
25. Deleted	
26. Deleted	
27. Get Help on System Use	Request and receive on-screen instructions on how to use the new system.
28. Sign On to System	Access the system with an appropriate role.
29. Control Access to System	Set up and maintain a list of people authorized to access the new system, and the roles they are authorized to assume.
30. Update System Tables	Set up and maintain both enterprise-wide and agency-specific data tables. Includes financial transaction types and AFRS transaction codes.
31. Add Agency	Set up and maintain a state agency's use of the new system.
32. Maintain Recipient/Vendor Information	Maintain the list and accompanying information on

Use Case	Description
	recipients of sub-grants and loans and vendors.
33. Track Agreement Deliverables	Track the deliverables for an agreement to assure compliance.
34. Track Agreement Outcomes	Track the outcomes for an agreement as they relate to agency and funder goals.
35. Register to Apply for a Sub-Grant	An individual or representative of an organization fills out or changes a registration form before applying for a sub-grant and submits it as instructed. One registration may be used for all subsequent applications for the individual.

2.5. Non-Functional Requirements

Non-functional requirements identified in the Definition of Requirements include:

- Operating Environment
- External Interfaces
- Availability
- Performance
- Quality
- Maintainability and Support
- Statewide Enterprise Architecture
- Documentation
- Security
- Accessibility
- Implementation
- Conversion

Because this system is part of the statewide Roadmap initiative, the Statewide Enterprise Architecture standards are particularly important. They are reprinted here:

In-Bound Integration
The application should provide access to the application through Application Programmable Interfaces (API) independent of the user interface. The application should have well documented and unrestricted (both technically and by license) API's.

The DIS Chief Architect estimates that 80% or more of the cost of integration can be attributed to the degree to which the application's user interface is separate from the rest of the application, especially the business rules and the API's.

Out-Bound Integration
Other applications should be isolated as much possible from changes in the solution system. This requires the application to have an interface between the business logic and the enterprise financial functions. Functional dependencies (e.g., business rules for messaging) should be separate from non-functional dependencies (e.g., types of messaging).

The goal is to minimize the impact on a system of changes to its integration partners. The technical goals are isolation and loose coupling between systems.

Opens Standards Conformance:
The application should use open (vendor-neutral) industry standards-based technologies, unless there is a strong business case justifying a proprietary alternative. If a proprietary solution is chosen, there is a need to ensure one or more "adapter strategies" is available to render the proprietary solution "open" to other statewide applications.

2.6. Evaluation Criteria

This document includes a Recommendation in section 8. The recommendation will draw on all the material in the document and will consider:

- The business issues and opportunities as identified above.
- The overall solution constraints as identified above.
- Each solution's fit to requirements, both functional and non-functional.
- Solution costs.
- Solution benefits.
- Solution risks.
- Degree of contribution to and support of the Roadmap "could be" processes.

2.7. Sub-Grants Management Logical Model

The Roadmap Grant Management Value Proposition document and the Definition of Requirements document for this project both describe agreement management processes for sub-grants, contracts and loans that will greatly benefit from having automated support. These processes include tasks to advertise, award, manage agreement, close out, among others. Dividing the job of agreement management into processes is a very useful and understandable

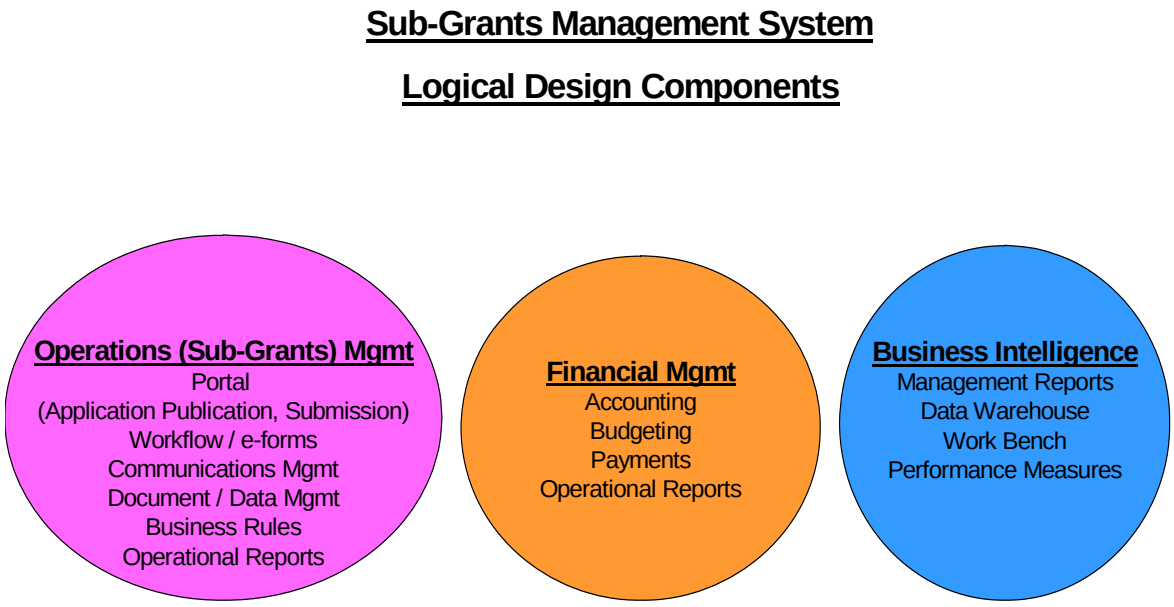
way to understand the overall task – and to gather requirement for an automated system to support it.

However, commercially available software products may not define the processes in the same way. The software products that support the agreement management processes generally include certain large components, the *combination* of which serve to support agreement management staff.

Before the team could evaluate software packages to support agreement management, it was necessary to group the requirements into logical components that would correspond to components of a software package. Then, each package component could be evaluated against the requirements. Some components are already in place at the State.

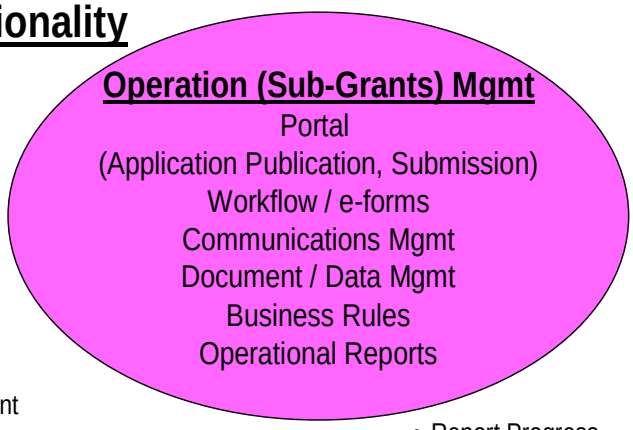
The following diagram divides the functional requirements into three logical components:

1. An Operations Agreement Management Component
2. A Financial Management Component
3. A Business Intelligence Component



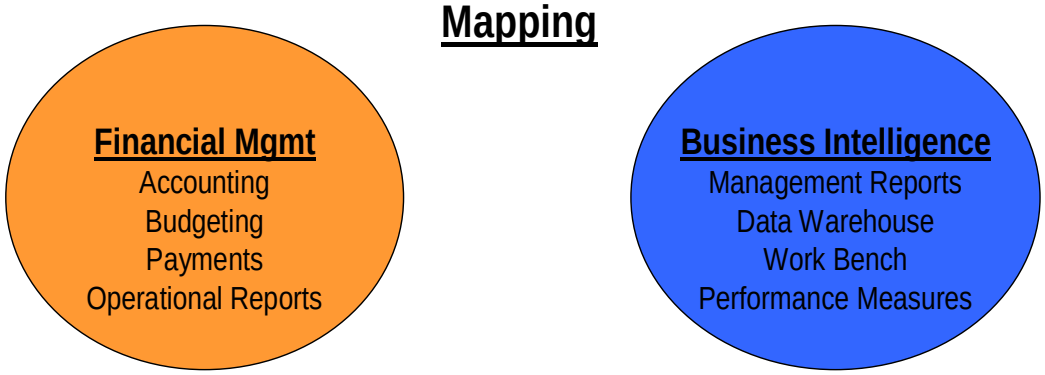
The functionality, expressed by use case, contained within each component is displayed in the following two diagrams. As the first diagram shows, almost all use cases are served by the Operations Agreement Management component. The second diagram shows that some of the use cases are also – or instead – served by one of the other components.

Component Functionality Mapping



- Advertise Sub-Grant
- Publish Sub-Grant Application
- Publish Sub-Grant Evaluation Criteria
- Set up Evaluation Workflow
- Register to Apply for Sub-Grant
- Apply for a Sub-Grant
- Evaluate Application
- Award Decision
- Set up/Change Agreement Info, Terms and Conditions
- Set up/Change Agreement Schedule
- Set up/Change Agreement Workflow
- Amend an Agreement
- Monitor Agreement
- Track Agreement Deliverables
- Track Agreement Outcomes
- Report Progress
- Report to Funding Source
- Request a Payment
- Process a Payment Request
- Process a Financial Transaction
- Evaluate/Inspect Audit a Grant
- Close out Agreement
- Make Information Available to Other Systems
- Get Help on System Use
- Sign on to System
- Control Access to System
- Update System Tables
- Add Agency
- Maintain Recipient/Vendor Information

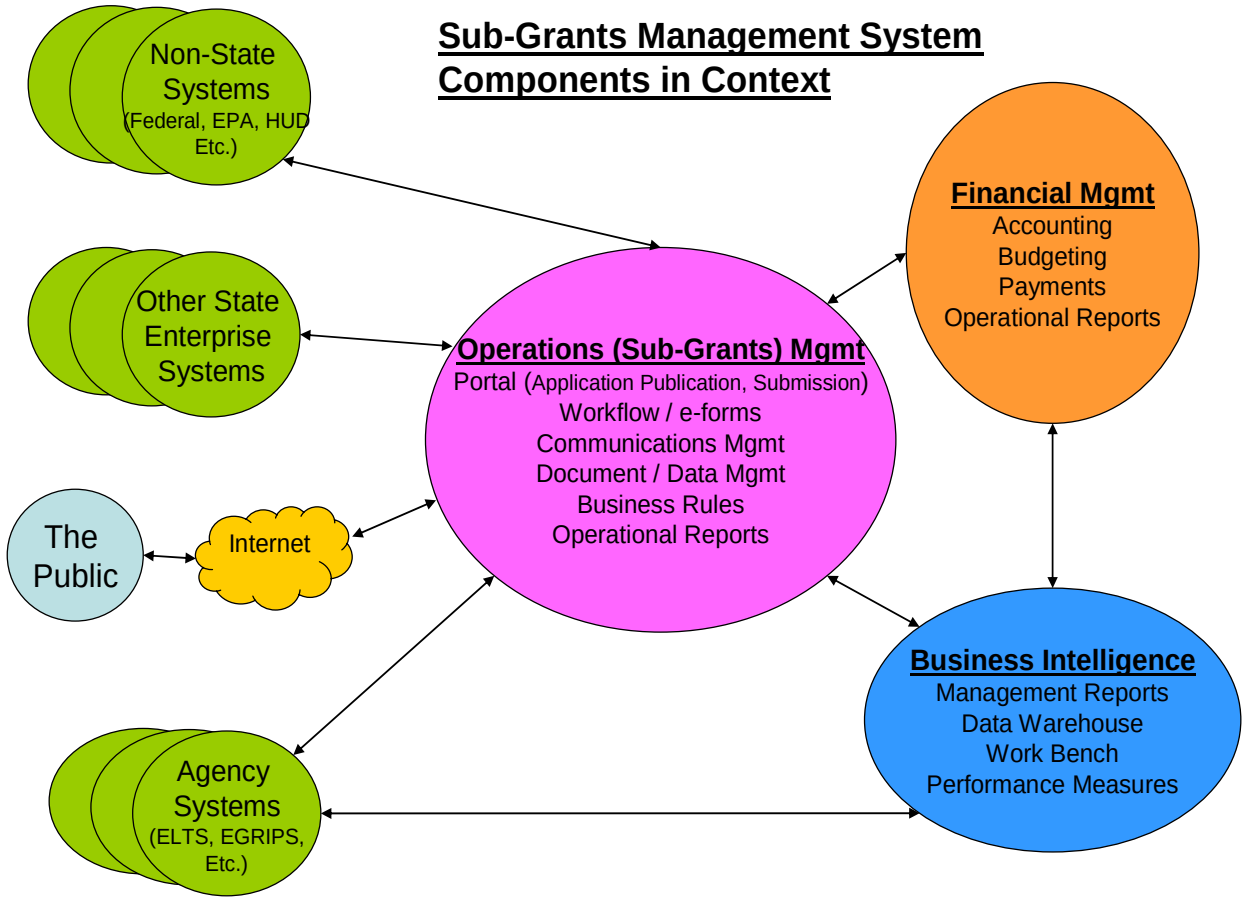
Component Functionality Mapping



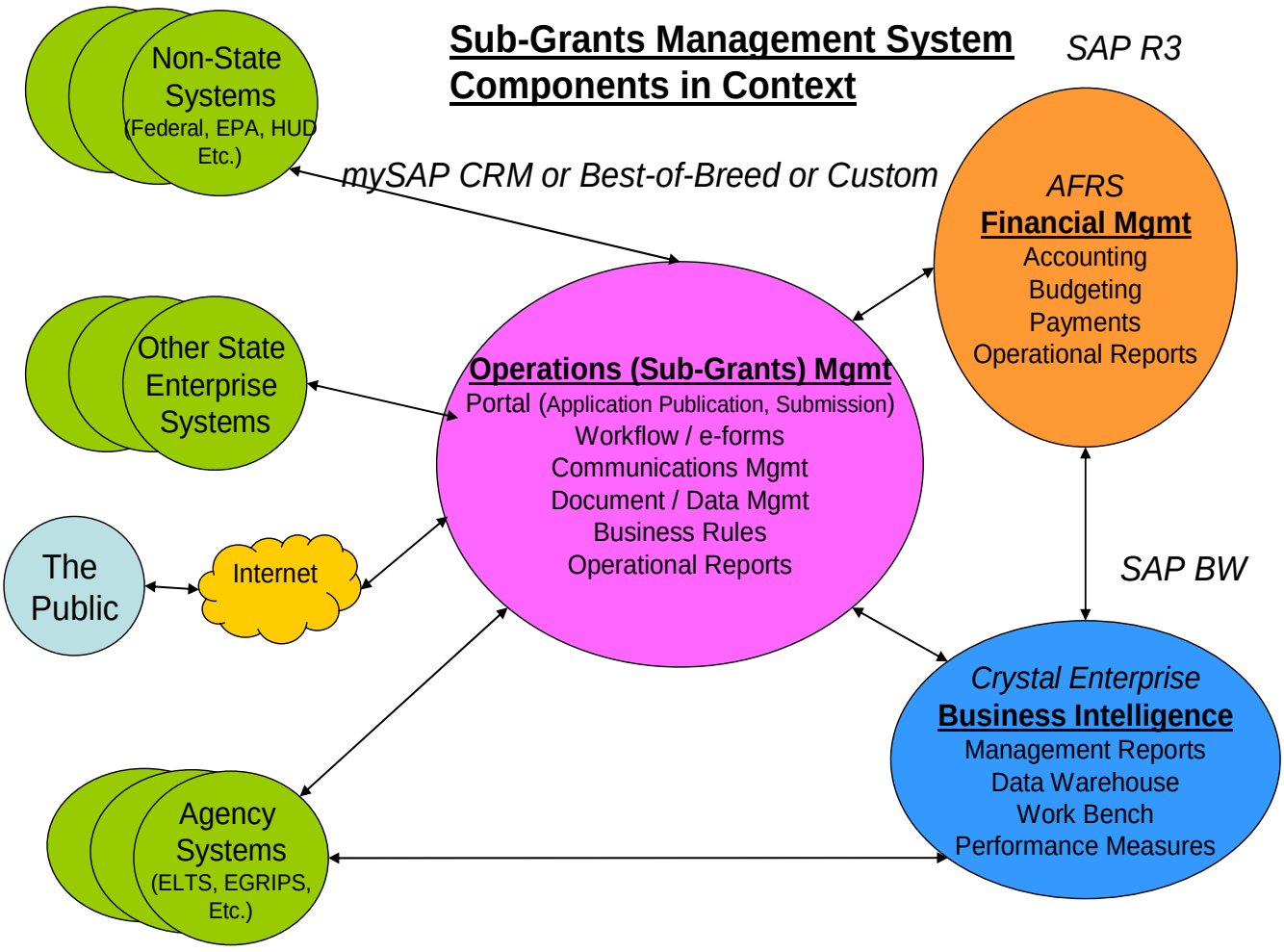
- Set Up/Change Agreement Budget
- Amend an Agreement
- Process a Payment Request
- Process a Financial Transaction
- Send Information To/From AFRS
- Maintain Recipient/Vendor Information

- Request Information on Agreement(s)
- Evaluate/Inspect/Audit Agreement
- Track Agreement Outcomes

The agreement management processes take place in the context of other processes and systems. The following diagram places the components in context and shows their relationships with each other and with other systems. This diagram shows in another way the importance of the Operations Agreement Management component: for allowing access by the public and interfacing with other systems as well as other components.



To understand the potential solutions, the final diagram identifies the possible solutions that can serve as the various components of the solution. This diagram also shows that having certain functionality within one solution is actually a disadvantage. For example, if a solution contains embedded features to process financial transactions, it is less suitable than a solution that can send transactions to a financial system, since the State is using AFRS for financial transactions. Likewise, the State has selected Business Objects Crystal Enterprise for business intelligence functionality, so business intelligence features embedded in the solution would likely not be used.



3. ALTERNATIVE SOLUTIONS DESCRIPTION

The work request for this feasibility study project asked that the study consider these alternatives:

- Acquiring and implementing a commercial off-the-shelf (COTS), best-of-breed system
- SAP grants management module (The Department of Personnel has acquired the SAP Human Resource System and the State has access to other modules within this enterprise package.)
- Adopting and adapting a grants management system in use by the Washington State Interagency Committee for Outdoor Recreation, known as PRISM.
- Building a custom application.

The work request also stated "Consideration of alternatives should also include the ease of integration of agency unique components with common components and transferring data to and from outside systems such as the statewide accounting system (i.e., Agency Financial Reporting System)."

The team has considered the above alternatives in light of:

- The functional and non-functional requirements as documented on February 7, 2006 (the effective date of research for this business case document).
- The logical component design of the solution described in the previous section, concentrating needed functionality in the Submission Management module.
- Knowledge of the alternatives themselves.

This consideration has narrowed the above list to three alternatives:

1. **Building a custom application using design guidance from existing systems, including PRISM.**
2. **Implementing the SAP Enterprise Solution for Grants Management, consisting of both the mySAP CRM module and R3 Financials.**
3. **Acquiring and implementing a commercial off-the-shelf (COTS), best-of-breed system.**

The PRISM and custom build options were collapsed into one for these reasons:

- PRISM is built as a single-agency client server application. Its user interface and business logic are not separate. Although there are plans to re-engineer PRISM to a web-based architecture, this is not near complete.
- While PRISM is highly functional for its current users, it was specifically written for their needs and the needs of the sub-grants they manage. As such, its data and database are

specific to certain sub-grant types. Its table maintenance and security features were designed to meet the needs of one agency only.

The enterprise solution to be recommended here must meet the non-functional and enterprise standards documented in the Definition of Requirements document. In order for PRISM to meet those standards, it would have to be re-written to a new architectural design, and include features for enterprise, multi-agency management. It would also have to accommodate the general needs of all sub-grants, not just the needs (both data and business logic) of one agency. In short, the features of PRISM would have to be changed to become more generic, more able to serve the data and format and business rules of many agencies.

It is our opinion that the effort to achieve these changes in PRISM would constitute a re-write of the current system and that such an effort would be consistent with the effort to custom build an application using design elements from PRISM as appropriate.

Descriptions of the three options follows.

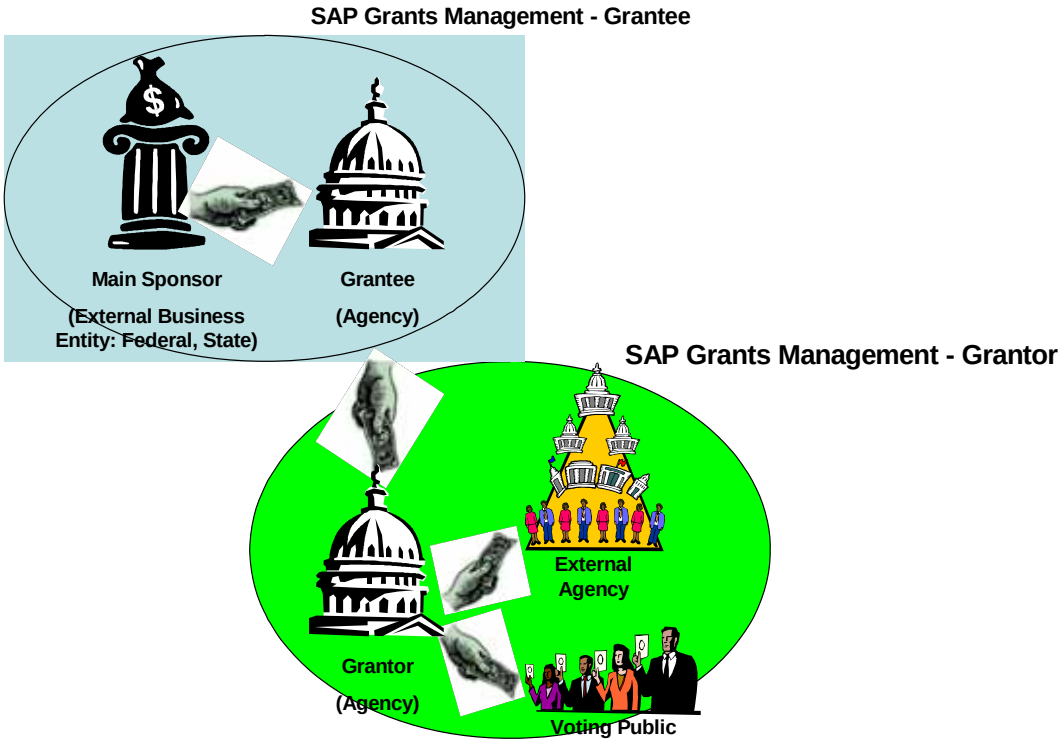
3.1. Custom Solution

For this alternative, a team will develop an application following the enterprise system development standards of the State through the life cycle of the application. The PRISM system or other systems in use could be used as a guide for the design of the user interface.

This option will require detailing the requirements stated in the Definition of Requirements, designing data structures, user interface and architectural components, and actual implementation through coding and testing the application. It is very likely that the development team will locate and integrate "utility" components that have been developed to meet certain sets of functional requirements, such as workflow and document management. Rather than locate such utilities, this study has assumed development of all functionality to provide a baseline estimated cost to develop.

3.2. SAP Grants Management Solution

SAP's Public Sector Solution for Grants Management has been designed to address the administrative and financial requirements of sponsored program management. It is composed of two major business processes: Grants Management – Grantee and Grants Management - Grantor. The following diagram and description illustrate these processes as defined by SAP.



Grants Management – Grantee

According to the SAP Public Sector Solution Business Maps 2005, "SAP Grants Management – Grantee enables public sector institutions to meet individual sponsor requirements without compromising their internal accounting processes." Its focus is on financial administration throughout the grant life-cycle. Major sub-processes include: Preparing Grant Application (Pre-Award), Recording Sponsor's Decision, and Executing the Awarded Grant. This functionality is enabled through the use of the mySAP ERP 2005 Financials or SAP R/3 Enterprise product.

Grants Management – Grantor

According to the SAP Public Sector Solution Business Maps 2005, "SAP Grants Management – Grantor supports the design and execution of programs that provide financial assistance to individuals or organizations." Its focus is on providing Web-enabled grant applications and claims that can be manually assessed or automatically assessed through a configurable rules

engine. The solution includes workflow authorization and notification in addition to correspondence and records management functions. The purpose of the Grantor Management solution is to meet the requirements of public sector organizations that fund grant programs. Major sub-processes include: Program Management, Planning and Budgeting, Application Assessment, Accounting.

This functionality is enabled through the use of the mySAP Customer Relationship Management (CRM) 5.0 and mySAP ERP 2005 (or SAP R/3 Enterprise). Budgeting and forecasting functions are achieved by means of integration with Funds Management (FM) and Controlling (CO) modules within the mySAP ERP Financials product.

The SAP ERP Financials product is made up of the following financial modules: Financial Module (FI), Controlling Module (CO), Funds Management Module (FM), Grants Management Module (GM) and Project Systems (PS).

- The Financials Module (FI) is composed of several sub-modules: General Ledger, Accounts Payable, Accounts Receivable, and Special Purpose Ledger.
- The Grants Management Module (GM) is designed to account for awards from government and other sponsors for a specific activity. It provides functionality to:
  - Plan, budget, identify, obtain, and record all funding related to received grants.
  - Plan, budget, identify, obtain, schedule, perform and record the tasks and activities related to managing the sponsored programs and furthering the sponsor's and organization's objectives.
  - Differentiate between eligible and ineligible costs.
  - Bill and record sponsor amounts.
  - Record and report all related costs, revenues, and required statistical information.

The Washington State Grant Management Business Process, which is out of scope for this study based on project scope as noted in Section 2.3 Constraints, corresponds to the SAP Grants Management – Grantee functionality which is contained primarily in the SAP ERP Financials application.

The Washington State Sub-Grant Management Business process ,which is the primary focus for this study (again, based on project scope), corresponds to the SAP Grants Management – Grantor functionality which is primarily implemented through the SAP CRM application.

SAP's roll-out strategy for the SAP Grants Management solution initially focused on grantee organization requirements with a subsequent focus on grantor management solutions. The SAP Grants Management – Grantee solution was piloted by customers in July 2002 with Erie County, New York being the first North American implementation (go live was 2004). There are additional implementations of Grantee Management in the higher education business sector for

the US; however, insufficient information could be obtained on implementation of the SAP Grants Management – Grantor solution.

Based on a review of the business issues and requirements for a Washington State Enterprise Grants, Contracts, and Loans Management solution documented in this study, the State would need to implement mySAP CRM 5.0 and some portion of SAP ERP Financials.

The State currently runs a limited copy of version 4.7 of the ERP Financials product. Upgrading to version 4.8 will assure access to the full functionality of the CRM module.

3.3. Commercial off-the-shelf (COTS), Best-of-Breed Solution

As noted in Gartner and Forrester research, many ERP customers are pursuing a strategy to acquire their own 'best of breed' solutions to business problems. This allows them flexibility to select components for financial management, human resources, purchasing, etc. from a variety of sources.

There are many vendors selling component solutions that could be used to satisfy the State's requirements for a Grants Management solution. These applications fall into several broad categories:

- Electronic Store Front systems
- Operational agreement management systems (sub-grants, contracts, loans)
- Integrated operational and financial management systems
- ERP solutions with integrated grants management functionality such as SAP, Oracle, AMS

Electronic Store Front systems provide an e-portal, data collection facility and not a complete Grants management system. They focus on collecting grant applications (and data) rather than an end-to-end grant management system. Once the data has been collected, it is then passed to other independent systems for processing.

Operational agreement management systems such as those espoused by e-procurement and e-sourcing vendors provide e-portal, workflow, document management, business rules engines that could be used to satisfy many of the requirements and issues for a Washington State Grants Management Solution.

Integrated operational and financial management systems include core financial systems that have had extensions added on to provide grant operational management capabilities.

A sample best-of-breed COTS solution was picked from vendors targeting solutions to the public sector for operations management functions as these segments were most representative of the State of Washington environment for this solution.

Factors that limited the selection of vendor products included:

- The deployment model of one centrally-administered application and database that serves multiple agencies.
- A web-based, services oriented architecture and SQL Server database.
- Stable company history as recognized by the major research services.
- An active client base that includes large government installations.

The solution explored here is implementing a best-of-breed COTS operations management system for public sector use that will meet most or all of the GCL requirements, including the non-functional software and architecture requirements.

Because any acquisition of software will require a formal acquisition process, this document used a representative best-of-breed application to illustrate fit and estimate costs and benefits. A list of vendors included in this research has been provided to OFM.

4. ANTICIPATED FIT/GAP

This section and the charts in Appendix B provide a description of the anticipated fit of each solution alternative. The following evaluation criteria were used to score the relative fit of each solution to the essential functional requirements as defined in the Definition of Requirements Deliverable. The scoring for the SAP and COTS alternatives can be seen in the charts in Appendix B. A more detailed chart for the COTS alternative was attached to the Alternatives Analysis document.

Score	Description
1	Requirement met without customization—out-of-box functionality.
2	Requirement met without customization—configurable.
3	Requirement met with—automated work around.
4	Requirement met with—manual work around.
5	Requirement met with—application customization.
6	Requirement not met—no identified work around.

4.1. Custom Solution

The custom solution was not compared against functional or non-functional requirements because it is assumed that the custom application would be designed and built to meet all requirements.

4.2. SAP Grants Management

Based on a review of the business issues and requirements for a Washington State Enterprise Grants, Contracts, and Loans Management solution documented in this study, the State would need to implement mySAP CRM 5.0 and some portion of SAP ERP Financials.

The WA State Sub-Grant Management Business process, which is the primary focus for this study corresponds to the SAP Grants Management – Grantor functionality the majority of which is implemented through the SAP CRM application.

The SAP Grants Management solution provides a reasonable degree of fit with the functional requirements at a use case level.

The major difference between this solution and the other alternatives is in the fit to the non-functional requirements and project constraints.

SAP does NOT meet Statewide Integration Architecture requirements/constraints for integration and open standards:

- Integration: Common way of integrating SAP with other apps is to use adapter strategy. Doesn't have #1 API, but market has adapters that can do that (for cost). As with the State's HRMS implementation, this could be a significant implementation and ongoing cost.
- Open Standards: SAP does not separate UI from business logic as well as the State would like. Need opportunity to break up processes to accommodate core and agency specific requirements.
- Open Standards: SAP proprietary platform not as flexible and could limit use of advanced or emerging technologies
- SAP does not support "unplugging" components that provide services that will be provided by an enterprise financial system.
- The SAP solution does not avoid tight integration of the Enterprise Resources band items.

SAP does NOT meet the current OFM budget allotment ($3.1M) for the implementation of a Grants Management solution.

SAP does meet Statewide Integration Architecture requirements/constraints for authentication/security:

- Authentication: Common Identity Store, SAP Identity Store (HRMS synchronization module) is closest to overall global identity store that State has. SAP is synchronized with State's Active Directory function

The chart in Appendix B illustrates the fit of the SAP solution to the functional requirements.

4.3. COTS/Best-Of-Breed

Functionally, best-of-breed applications, have a high degree of fit with the requirements at a use case level. Virtually all requirements for the operational support of sub-grant management are met directly out of the box or with some configurable settings. Interfaces to other systems are easily configurable; however, the requirement to "…receive, interpret and handle AFRS acknowledgement of a financial transaction" would require some customization depending upon the actions required.

The chart in Appendix B illustrates the fit of the COTS Best-of-Breed solution to the functional requirements.

5. PROJECTED COSTS OF ALTERNATIVE SOLUTIONS

5.1. Custom Solution

Based on the requirements, an indicative function point count done on the requirements, and the assumptions listed below the chart, the projected costs of developing a custom solution, using the design of existing systems as appropriate, are listed below.

OFM and agency implementation and ongoing costs have not been estimated in detail and may be understated.

Custom Build—Cost Estimates ***Component [Object]***	***Low Range***	***High Range***
Vendor/Contractor Implementation Costs [CA, EL]	$2,320,000*	$3,390,000**
Agency Preparation (OFM+Agencies' Cost) : Salaries [A]	$ 100,000	$ 100,000
Agency Preparation (OFM+Agencies' Cost) : Benefits [B]	$ 30,000	$ 30,000
Implementation (OFM+Agencies' Cost) : Salaries [A]	$720,000#	$720,000#
Implementation (OFM+Agencies' Cost) : Benefits [B]	$240,000#	$240,000#
Hardware [JC]	$120,000	$180,000
Training (OFM Cost) Salaries and benefits [A,B]	TBD (OFM)	TBD (OFM)
Capital Investment (rounded up to 10,000)	**$3,530,000 + TBD**	**$4,660,000 + TBD**
Annual Software Maintenance (OFM Cost) [A,B]	$200,000^	$270,000^^
Annual Hardware Maintenance [EE]	TBD (OFM)	TBD (OFM)
Annual Vendor/Contractor Support [CA, EL]	$350,000	$510,000
Five Year Cost of Ownership (rounded up to 10,000)	**$2,750,000 + TBD**	**$3,900,000 + TBD**

Figure taken from Supplemental Budget Request 1/10/2006
^ Assumes 2 developers and 1 product manager
^^ Assumes 3 developers and 1 product manager
* Assumes full time OFM developer and data administrator, 2 contracted implementation analysts, function point base @ 15 hours per function point and a blended rate of $120/hr, plus $90,000 for QA
** Assumes full time OFM developer and data administrator, 2 contracted implementation

analysts, function point base + 50% @ 15 hours per function point and a blended rate of $120/hr, plus $90,000 for QA

All figures are rounded up to 10,000.

The estimated costs for developing a custom solution are based on two sources:

- The Supplemental Budget Request prepared by OFM dated 1/10/2006, which contains estimated OFM and agency staff needs for the project and expected salaries and benefits, as well as projected QA and equipment costs.
- The indicative function point count prepared by Sierra Systems Software Development Center staff, included as Appendix C to this document.
- The software development experience of the Sierra Systems Software Development Center staff in estimating 15 hours per function point. The estimate is based on a number of factors, including:
  - Development technologies.
  - Complexity of business functionality.
  - Duration of project.
  - Team size.
  - Team distribution (remote vs onsite).
  - Team experience level.
  - Industry standard and actual development experience.

The estimate above uses the Supplemental Budget staff salary and benefit estimates, as well as the QA and equipment estimates without change. The contractor implementation costs are calculated as follows:

The base indicative function point count is 1,185. The industry-accepted level of accuracy for an indicative count is plus/minus 50%, giving a function point range of 593 to 1778. Given the anticipated high level of business, data and workflow complexity inherent in this type of system and the estimating risks and assumptions identified in the report in Appendix C, the lower range figure has been discounted, and the indicative function point range formalized at 1185 to 1778 function points. Both low and high ranges assume 15 hours per function point. Implementation costs are not included in a function point count.

Low range:
Base function point count x 15 hours x $120 blended rate

High range:
Base function point count x 1.5 x 15 hours x $120 blended rate

As stated in the function point document in Appendix C, this count is indicative only and should be updated when the following information is available:

- A data model that shows the relationships between logical files.
- Information on how the logical files are maintained or referenced by the application.
- Models that show the incoming and outgoing information flows (e.g., interfaces to other applications).
- Information on the general system characteristics.

5.2. SAP Grants Management

These high-level cost estimates for implementing the SAP Grants Management solution to address Washington State Enterprise Grants, Contracts, and Loans Management business issues and requirements were developed based on the following assumptions:

- Upgrading to version 4.8 of SAP ERP will be needed to access the full functionality of the SAP CRM 5.0 module.
- For the SAP Grants Management solution, mySAP CRM 5.0 would need to be implemented. In addition, there would need to be a limited implementation of the following SAP ERP Financial modules to support CRM master data and provide Grantee Management functionality: General Ledger in the FI module, the GM module, the CO module and Funds Management.
- SAP annual maintenance fees tied to license fees.
- SAP charges upgrade license fees. SAP upgrades average one every 18 months.
- SAP uses a named instead of concurrent user pricing model for licensing fees.
- SAP offers different categories of licenses at different costs for different user types.
- An implementation team of consultant resources includes 18-20 FTE's: 3-4 SAP Developers, 4 SAP Technical (Security, Basis, Web, DB), 3 SAP CRM Functional, 3 SAP ERP Financial Functional, 2 Team Leads (Technical & Operations), 2 Project Management Office (PM, CM), 2 Support (Training, Help Desk).
- For the low range estimate: An implementation schedule of 12 months.
- For the high range estimate: An implementation schedule of 20 months.
- For SAP consultants, a blended rate of $200 per hour was used for estimating Vendor/Contractor Implementation and configuration costs.
- OFM does not have key information from which to create estimates for implementing this solution as a state-wide Grants Management application. Missing critical information from non-participating agencies includes: # of programs, # of grants, and transaction volumes (for

determining conversion estimates and additional hardware costs), existing GM interfaces that must be redeveloped, and number of users (licensing and training costs).

- SAP functionality is based on best practices. It is better suited to clients willing to change processes (BPR) to use the standard software functionality versus those who would rather keep client process the same and customize software to meet client process. It is assumed that SAP customization will be kept to a minimum and Agencies will change their business processes accordingly.
- The costs to be incurred by individual agencies for changes in their grants management, contracts management, loan management, and reporting processes are not considered to be comparable across all options and cannot be estimated at this time for an SAP GM solution.
- OFM Support costs includes 3-4 FTE's for system administration with an annual FTE cost estimate of $60,000 (includes salary & benefits).

SAP ENTERPRISE—Cost Estimates ***Component [Object]***	***Low Range***	***High Range***
Solution License Fees* [JC]	TBD (OFM)	TBD (OFM)
Vendor/Contractor Implementation and Configuration Costs [CA, EL]	$ 7,500,000	$ 12,000,000
Hardware [JC]	$120,000	$180,000
Training (OFM Cost) Salaries and benefits [A,B]	TBD (OFM)	TBD (OFM)
Implementation (OFM+Agencies' Cost) : Salaries [A]	$720,000#	$720,000#
Implementation (OFM+Agencies' Cost) : Benefits [B]	$240,000#	$240,000#
Capital Investment (TBD*)	**$ $8,580,000 + TBD**	**$13,140,000 + TBD**
Annual Software Maintenance Fee [EE]	TBD (OFM)	TBD (OFM)
Annual Hardware Maintenance [EE]	TBD (OFM)	TBD (OFM)
Ongoing Support [JC]	$ 250,000	$ 300,000
Five Year Cost of Ownership (TBD*)	**$TBD**	**$TBD**

Figure taken from Supplemental Budget Request 1/10/2006
* OFM to provide feedback on SAP licensing arrangement with the State.

All figures are rounded up to 10,000.

The costs to OFM associated with implementation and training and the costs are considered to be comparable across all options and are not explicitly stated here.

5.3. COTS/Best-Of-Breed

Based on the requirements and the assumptions listed in the Business Case document and the additional information presented in the Work Plan, the projected costs of implementing a Best-of-Breed solution are between $3.30 million and $3.86 million.

Five-year cost of ownership is estimated at $1.65 million to $2.5 million, plus hardware maintenance costs. These estimates are explained further below.

Assumptions for the cost estimates for the implementation of a COTS Best-of-Breed solution include:

- The GCLM project will include a five (5) month Agency Preparation phase followed by a seventeen (17) month solution implementation phase.
- Agencies will perform the Agency Preparation activities without the need to hire external consultants.
- Vendor/Contractor Implementation Costs include application enterprise licensing and the services of the vendor/contractor implementation team.
- The vendor/contractor implementation resource roles include Project Manager, Business Analysts, Technical Lead, Technical Architect, Application and Technical Specialists (Develop customizations, interfaces, conversion and reports).
- A blended rate of $125 per hour was used for vendor/contractor implementation resources.
- Hardware/software costs include 3 servers, Microsoft IIS Web Server, Microsoft SQL Server. These estimates do not reflect any discount the state may be able to take advantage of.
- Annual software maintenance fee is based on the license fee for the installed components.
- Annual Vendor/Contractor Support is an estimate of the amount of time that OFM may require from the vendor in support of enhancements and upgrades.
- Implementation costs (OFM + Agencies' Cost) include project management, product management, agency business leads, technical specialists, testers, data administration, network support and external quality assurance. Costs for these are taken from OFM's supplemental budget request dated 1/10/2006.
- CTED and ECY will each contribute qualified resources to staff roles for product manager, business lead, tester, and technical specialist (responsible for developing conversion, interface, customizations, and reports).
- For the Agency Preparation Phase, a total of 3.5 FTE's will be contributed for five (5) months by the agencies to cover the following roles: Project Manager – OFM (1.0 FTE), Product Manager – OFM (0.5 FTE), Business Lead – CTED (1.0 FTE), and Business Lead – ECY (1.0 FTE).

- For the Implementation Phase of seventeen months, both CTED and ECY will each contribute qualified resources totaling 2.25 FTE's to fill the following roles: Business Lead (1.0 FTE), Technical Specialist (0.5 FTE), and Tester (0.75 FTE).
- For the Implementation Phase of seventeen months, OFM will contribute qualified resources totaling 4.35 FTE's to fill the following roles: Project Manager (1.0 FTE), Product Manager (1.0 FTE), Test Lead (1.0 FTE), Technical Specialist (1.0 FTE), Database Administrator/Infrastructure Support (0.25 FTE), and Infrastructure Support (0.10 FTE).
- For the Implementation Phase of seventeen months, contractor resources are estimated at 4.5 FTE's and include a Project Manager, Functional Lead, Technical Lead, Technical Architect, and Technical Specialists. (See the Work Plan for further information on project staffing levels).

Based on the fit to requirements and assumptions above, the projected costs of implementing a COTS Best-of-Breed solution are listed below.

Best-of-Breed—Cost Estimates ***Component [Object]***	***Low Range***	***High Range***
Vendor/Contractor Implementation Costs [CA, EL]	$1,900,000	$2,400,000
Agency Preparation (OFM+Agencies' Cost) : Salaries [A]	$ 100,000	$ 100,000
Agency Preparation (OFM+Agencies' Cost) : Benefits [B]	$ 33,000	$ 33,000
Implementation (OFM+Agencies' Cost) : Salaries [A]	$860,000#@	$860,000#@
Implementation (OFM+Agencies' Cost) : Benefits [B]	$285,000#@	$285,000#@
Hardware/Software [JC]	$120,000	$180,000
Training (OFM Cost) Salaries and benefits [A,B]	@	@
Capital Investment (rounded up to 10,000)	**$3,300,000**	**$3,860,000**
Annual Software Support (OFM Staffing Cost) [A,B]	$200,000#	$270,000#
Annual Hardware Maintenance [EE]	TBD (OFM)	TBD (OFM)
Annual Software Maintenance [EE]	$50,000	$80,000
Annual Vendor/Contractor Support [CA, EL]	$80,000	$150,000
Five Year Cost of Ownership (rounded up to 10,000)	**$1,650,000 + TBD**	**$2,500,000 + TBD**

Twelve (12) month figures taken from OFM Supplemental Budget Request 1/10/2006 and extrapolated for a seventeen (17) month project implementation schedule.

@ Training costs are included in the implementation costs for OFM and Agencies as these responsibilities will be conducted by the OFM Product Manager and the Agency Business Leads.

6. ANTICIPATED BENEFITS OF ALTERNATIVE SOLUTIONS

6.1. Introduction

A new GCLM system will have both strategic and operational benefits. Strategic Benefits include new capabilities and improvements in the competitive position of the organization that may be realized as a result of the increased availability of information and data on the cost and quality of agency programs and services. Operational Benefits include the various tangible and intangible benefits resulting from business process improvements.

It is impossible to capture and value all of the benefits of a new system. The complexity of measurement, the lack of a generally accepted measurement method, and the diversity of organizational processes that prevent the collection of historical data are just a few of the reasons why.

It is likely that the benefits of a new GCLM system are significantly underestimated here in relation to costs, as many of the key benefits are qualitative and consequently cannot be included in this quantitative analysis.

The project team used several sources of information for quantifying and valuing potential benefits associated with the implementation of a new GCLM system for CTED and ECY. Listed in order of significance, they are:

- The participating agencies of this study – CTED, ECY, and OFM – through interviews with program, Fiscal and budget staff.
- Review of existing statewide grant management studies including: (1) Berk & Associates Inventory and Evaluation of the State's Public Infrastructure Programs and Funds report dated December 16, 2005; and (2) JLARC Investing in the Environment: Environment Quality Grant & Loan Programs Performance Audit, Report 01-01 dated January 22, 2001.
- Review of the Washington State Administrative Requirements for Ecology Grants and Loans, Publication No. 91-18, Revised March 2004.
- Review of most recent State Auditor Reports for CTED and ECY.
- Review of industry performance measurement studies for agreement management systems including e-procurement, e-sourcing, and contracts management.
- Our experience with contract negotiations and system implementations involving governments of similar size and budget.
- Other public sector associations including GFOA, NASPO, etc.

6.2. Key Assumptions

In order to quantify future benefit estimates, it was necessary to make certain assumptions about the grants, contracts and loan management processes for each agency. The primary assumption concerning operational benefits was that the implementation of a GCLM solution would result in workforce productivity increases for both CTED and ECY. This assumption is reasonable based on the following operational benefits that can be expected to be realized with the new system:

- Reduced paper-based document handling and manual work flow through the automation of the sub-grant process from electronic advertisement and applicant response through project close-out, financial resolution and overall program outcome tracking.
- Reduced redundant data entry and manual processes allowing staff to spend less time on "transaction processing" and more time on "decision support" roles.
- Reduced impact of staff transitions on operational performance due to the use of forms, template and clause libraries, documented workflows, and automated business rules.
- Reduced data entry errors and time needed for corrections due to consistent data validation, editing and business rules.

These operational benefits would impact the current range of service level responses as documented by the OFM Roadmap team and contained in the Roadmap Grant Management Value Proposition:

Service Area	Range of Service Level Response
Percent of subgrant application proposals requiring follow-up and rework by program staff and/or recipient	• Responses ranged from two percent (2%) to ninety percent (90%). • For some competitive programs, applicants submitting incomplete documents lose the opportunity for funding consideration because non-compliant applications are discarded.
Elapsed time between receipt of applications and award of funds	• Ten working days to fourteen (14) months, or even longer for one program that requires Legislative approval for each project
Percent of subgrant payment requests requiring follow-up and rework by program staff and/or recipients	• Four percent (4%) to fifty percent (50%) • Reasons for payment rejection included missing signatures, math errors, date of service questions, cost eligibility questions, etc.
Percent of progress reports requiring follow-up and rework by program staff and/or recipients	• Two percent (2%) to twenty-five percent (25%) • One program indicated that thirty percent (30%) of progress reports are not submitted on time and have to be requested from the recipient so payment requests can be

Service Area	Range of Service Level Response
	processed.
Elapsed time between receipt of invoice and payment	• Two working days to two weeks to thirty days, or longer if questions cannot be resolved timely. • One program allows automatic monthly payments to eligible recipients without billing.

In addition, workforce reductions are not necessary to achieve workforce productivity gains. An economic benefit can be "realized" from the reallocation of staff hours from lower to higher value tasks. The Berk & Associates study provided several examples of agency issues and opportunities which could be helped by workforce productivity gains from the implementation of the GCLM solution. Several examples are provided in the following table.

Agency / Department / Office	Program	Issue/Opportunity
CTED – Economic Development Division, CERB	Job Development Fund	Beginning with the 2007-09 biennium, $50,000,000 in grants will be managed by CERB staff via a competitive process now being developed.
CTED – Local Government Division, PWB	Public Works Trust Fund Construction Loan Program	Higher demand on Board resources due to declining federal resources, coupled with increasing regulations. Transition in Board members. Transition in staff.
CTED – Local Government Division	CDBG Imminent Threat Grant	The biggest challenge is delivering a fast enough turn-around on grant applications.
DOE - Shorelands and Environmental Assistance	Flood Control Assistance Account Program	Reduced funding from other sources has put more of a burden on FCAAP to cover administrative costs.
DOE – Water Resources Program	Referendum 38 – Water Supply Facilities	This biennium (2005-07) is the first time there is a formal competitive application.

6.3. Methodology

There is uncertainty in predicting future benefits. As such, the team used a standard method employing several "reasonableness" checks for estimating benefits from potential workforce productivity gains.

Step 1. The first step was to determine the current effort expended in GCLM processes by each agency. GCLM processes included FIND, AWARD, POST-AWARD, CLOSE-OUT, and REPORTING. Estimates were developed through interviews with agency program, Fiscal and budget staff. There is uncertainty in the accuracy of these estimates based on uncaptured or incomplete operational performance metrics such as staff hours expended for GCLM processes, number of applicants, number of applications received, number of awards, etc.

As a reasonableness check, the estimates for current GCLM work effort were compared to the total agency FTE count for each agency. The estimates for direct effort in the current GCLM processes and the relative percent of that effort to total agency FTEs are shown in the following tables. Agency personnel have reviewed these numbers and believe they are reasonable.

CTED	
Total Agency FTE's	355
Estimated current GCLM process effort (FTE's)	50
Current GCLM Process effort as a Percentage of Total Agency FTE's	14.1%

ECY	
Total Agency FTE's	1483.7
Estimated current GCLM process effort (FTE's)	178
Current GCLM Process effort as a Percentage of Total Agency FTE's	12.0%

Step 2. The next step was to assign a percentage gain in workforce productivity to each agency. Environmental conditions may impact the realization, timing and magnitude of workforce productivity gains. These include: current sophistication of agency technology and processes; agency capabilities for training and user support; change management; organizational management; and legislative mandates (introduction of new programs). As noted in the OFM Roadmap Grant Management Value Proposition, the biggest drivers for subgrant management process variations among agencies were:

- The extent and complexity of program-specific rules and regulations imposed by grant funders
- The level of investment the agency or program has made in process improvement, applicant and recipient training, and technology tools to support the process.

Based on information provided by the agencies, different workforce productivity gain factors were established for CTED and ECY. Higher gain factors were established for CTED than ECY due to CTED's relative lower investment in technology tools and process improvements.

Based on uncertainty in the work effort estimates, a conservative approach was taken to establishing estimates for workforce productivity gain factors. This is consistent with other industry studies for clients implementing systems to address non-automated processes. The factors presented in the following tables have been reviewed by agency personnel. Based on their knowledge of the current GCLM processes, the agencies believe these potential workforce productivity gains are reasonable.

CTED Workforce Productivity Gains	Factor
Within first 3 months after implementation	0.0%
3 to 6 months after implementation	2.0%
6 to 9 months after implementation	4.0%
9 to 12 months after implementation	8.0%
1 to 7 years after implementation	8.0%

ECY Workforce Productivity Gains	Factor
Within first 3 months after implementation	0.0%
3 to 6 months after implementation	1.0%
6 to 9 months after implementation	2.0%
9 to 12 months after implementation	4.0%
1 to 7 years after implementation	4.0%

A refinement of this process would be to establish workforce effort estimates and productivity gain percentages for each GCLM sub-process – Find, Award, Post-Award, Close-Out, and Reporting. This has not been pursued based on the inadequacy of currently available performance data for each agency.

Step 3. The next step was to apply the workforce productivity gain factors to the current GCLM effort estimates to quantify the amount of time savings each agency could be expected to realize. These computations can be found in Appendix D for CTED and Appendix E for ECY.

An important assumption on the realization of savings from workforce productivity improvements is that they will be realized gradually over the first one to two years allowing the agencies to deal with ramp-up, change management and learning curve issues.

Step 4. To value future benefit estimates related to workforce productivity gains, we obtained the following agency aggregate personnel cost data:

- CTED aggregate personnel costs: Annual Salary $60,000, Benefits $16,800 (28% of Salary), and Indirect costs of 38.6% of salaries plus benefits.
- ECY aggregate personnel costs (based on information provided in Fiscal Notes): Annual Salary $60,000, Benefits $15,000, and Indirect costs of 39.6% of salaries plus benefits.

The valuation of workforce productivity gains can be found in Appendix D for CTED and Appendix E for ECY. This information has been transferred to Form 5 of the DIS CBA spreadsheets.

As a reasonableness check on these computations, a second method for estimating workforce productivity gains was used. This second method was based on the number of "users" of the new GCLM system. Two categories of users were established:

- Intense users who would be using the system on a near daily basis such as data entry personnel.
- Casual users who would be using the system on an infrequent basis to review information or generate reports.

Anticipated system user information provided by the agencies included:

CTED	
# of Intense Users	50
# of Casual Users	150

ECY	
# of Intense Users	165
# of Casual Users	200

Two scenarios were established for the potential workforce productivity gains to be realized by each user category:

- Conservative. In the conservative scenario it was assumed that "intense" users will achieve a 3% gain in productivity and that "casual" users will achieve a 1% gain in productivity.
- Moderate. In the moderate scenario, it was assumed that intense users will achieve a 5% and casual users a 2% gain in productivity.

Benefit calculations from the second method for the conservative scenario were consistent with those generated from the primary method. Based on the uncertainty in the data provided by the agencies, "consistent" was defined as being within plus or minus twenty-five percent.

6.4. Summary

Break-even Point. As shown in Form 1 of the DIS CBA spreadsheet, the project reaches its breakeven point during year ten or ten years after the final implementation using the conservative approach. Based on variations in the realization of benefits, the breakeven point could be realized sooner for the agencies; this conservative valuation of benefits does not take into account the intangible strategic benefits from the GCLM solution.

Limitations of the Analysis. The cost/benefit analysis in this report should be considered a contributing element to the Agencies' decision-making process, but not the principal driver. There are several strategic benefits of a new GCLM system for the agencies and the State, and they along with costs, should be the major factors considered in the analysis.

Strategic Benefits. Key strategic benefits the agencies and the State can expect to achieve from an enterprise GCLM solution implementation include:

- Information flow and workflow:
  - Provide the ability to maintain and access a greater amount of timely and accurate data which will support improved decision-making by agency staff as well as providing enterprise wide data that is critical for executive planning.
  - Improve monitoring and management of projects using scheduled events and notice triggers to alert staff to required activities which reduces errors and audit and compliance issues.
  - Integrate with existing business procedures allowing automated workflow processes to interact with manual procedures.
  - Provide auditing and tracking for documents and versions of documents.
- Web-enablement & e-Government:
  - Enhance the ability to support and implement web-based initiatives and improve customer service to both internal and external stakeholders through new service delivery models.
  - Simplify public access to grant information and applications which improves participation and reduces administrative support.
- Standardization:
  - Facilitate process improvement opportunities and standardization.
  - Provide the ability to standardize processes across program areas and agencies which will improve productivity and enterprise reporting.
- System Integration:

- Ability to integrate to internal and external systems using standard communication protocols.
- Technology Infrastructure for the future and scalability.
- A COTS application with on-going vendor support will reduce the risk associated with customized, legacy systems.

As noted in the Berk & Associates study (see Section 1.5 Sources of Information), a well-managed organization or system should be founded on a strategic management framework that integrates and prioritizes three requirements: (1) clear strategic framework and policy direction; (2) robust management systems and processes; and (3) aligned organizational structures. Management system and process recommendations from this study included:

- Invest in Financial Management Systems that increase efficiency and reduce duplicated efforts.
- Invest in modern enterprise information systems to support integrated program decision-making and reporting.
- Use information technology to create a single portal of electronic entry into the State's system for improved information processing, collection and reporting.

Meeting the Berk study recommendations will require enabling policy and organizational initiatives. The extent to which such policies and initiatives are carried out will impact and could reduce the potential benefits from the implementation of a new sub-grants management system.

Additional potential strategic and operational benefits by solution alternative are shown in the following sections. While some of these benefits may be difficult to quantify in monetary value, they can have significant impact on agency business processes and operations, and improve the efficiency and effectiveness of agency programs and services.

6.5. Benefits Common to All Alternatives

All alternatives can be expected to fill many of the business opportunities described above:

- Simplify public access to grant information and applications which improves participation and reduces administrative support.
- Fully automate the sub-grant process from electronic advertisement and applicant response through to project close-out, financial resolution and overall program outcome tracking. This provides a major reduction in paper-based document handling.
- Integrate well with existing business procedures allowing automated workflow processes to interact with manual procedures.
- Provide the ability to standardize processes across program areas and agencies which will improve productivity and enterprise reporting.

- Adapt easily to changing business needs by providing the application administrator the ability to setup and change documents, data and workflow processes.
- Provide instant access to workflow and document status for any applicant or staff thereby reducing support time, shadow tracking systems and accelerating decision-making.
- Improve monitoring and management of projects using scheduled events and notice triggers to alert staff to required activities which reduces errors and audit issues.
- Provide complete auditing and tracking for documents and versions of documents.
- Consistent data validation, editing and business rules reducing errors and ensuring integrity of data.
- Use of forms, template and clause libraries improves standardization, consistency and productivity.

6.6. Custom Solution

Developing a custom solution using design guidance from existing systems has these potential benefits:

- The solution will be specifically designed to meet the State's Enterprise Architecture standards.
- The solution will be specifically designed and coded to meet the State's core requirements and accommodate the agency-specific requirements.
- The State may control the staffing decisions for a custom development, choosing to contract and/or staff from State agencies.
- The State may control the specific enhancements made to the system through its own change control process.

6.7. SAP Grants Management

Implementing an SAP solution promises these benefits:

- Encourages use of SAP-defined best practices.
- Meets the state's functional requirements through implementation of two fully supported SAP components.
- A package implementation, rather than custom development, will reduce the occurrence of specific customizations and encourage more uniform processes and data across agencies and programs.
- The two SAP components needed for this solution can be expected to work seamlessly with each other.

- The State will receive more value sooner for its investment in SAP licenses.
- SAP identity store is closest to the overall global identity store the State uses. SAP is synchronized with Active Directory.

6.8. COTS/Best-Of-Breed

Implementing a best-of-breed COTS solution is a viable option for the state for a number of reasons. These benefits can be expected:

- Written specifically for public sector environment mapping more directly to public sector business processes which minimizes integration and training costs.
- Meets the state's requirements in a robust fashion and within the time constraints.
- Will implement more functionality sooner than a custom developed application or ERP solution.
- Faster implementation will allow implementation of more program types than a custom developed application or ERP solution.
- Incremental implementation of agencies and programs begin earlier in the project.
- Requires less ongoing agency support than custom development or ERP solution.
- Provides an ongoing upgrade path with additional features and functionality.
- A package implementation, rather than custom development, will reduce the occurrence of specific customizations and encourage more uniform processes and data across agencies and programs.
- Simplifies interfaces with other systems using XML technologies to manage the importing, exporting and real-time communications.
- Requires the least amount of module/component integration.
- Uses Windows and Intel based commodity platforms that reduce the cost of facilities and infrastructure.
- Lower risk elements produce estimates that are more accurate than custom development or ERP solution.

7. ANTICIPATED RISKS

7.1. Risks Common to All Alternatives

Certain risks will be present no matter which alternative is chosen. A detailed list of risks can be found in the Risk Plan. General risks include:

- Lack of agency participation and support will put the project at risk.
- The Roadmap initiative is in progress. An enterprise financial system is anticipated but not yet implemented.
- The effort to implement statewide enterprise financials is very large, very complex and is being carefully planned through the Roadmap project.
- The State's Enterprise Architecture is still emerging. This study documents the current state of the recommendation, which is not yet complete.
- As an early Roadmap project intended to serve the state enterprise and not just one agency, the project to implement this system will be more complex than single-agency projects in at least these ways:
  - Determining requirements and their priorities will be more time-consuming to involve more stakeholders.
  - Making sure the application meets the essential priority requirements will be more time-consuming to involve more stakeholders in coordination and testing.
  - The effort to implement the system will be increased by the number of people affected in each agency.
- The data involved in managing sub-grants and loans vary widely based on the funding source of the agreement, the type of program, the specific program, and other factors. The solution system must be able to accommodate these wide differences and still provide useful functionality for agency users.
- There are many desktop databases and spreadsheets now in use to help manage agreements. The solution must provide enough functionality to replace at least some of these "shadow" systems or run the risk of adding yet another application to which users must "feed" data.
- This is the first time a team has been formed to implement a Roadmap system. The team will need time to build its processes and strong leadership.

7.2. Custom Solution

General risks specific to the custom solution include:

- A custom developed application can become static and unusable because of budget pressures. The current CGP application at Ecology has experienced this.
- This alternative places the most schedule and performance risk on the State.
- There is a risk of spending resources to develop functionality that is more economically obtained by purchasing a packaged component. Avoiding this risk will require spending time researching functional component packages, creating a schedule risk.
- The estimating margin of error is highest with this option at +/- 50%.
- Delays in the development schedule will reduce the degree of deployment, i.e., agencies, programs.

7.3. SAP Grants Management

General risks specific to the SAP solution include:

- The State's future plans to implement statewide enterprise financials may require reconfiguration of SAP financials functionality implemented as part of grants management.
- SAP CRM was developed for private sector sales organizations, (help references still refer to private entity sales and marketing,) which increases the risk of customizations to accommodate the public sector.
- SAP operates on its own proprietary platform; adoption of new technologies will be dictated by SAP, not by business or technical need.
- Research produced no information regarding a public sector SAP sub-grant management implementation.
- Program interfaces for SAP must be accomplished through adapter strategy applications, which require maintenance and initial cost, and are exceptional to the statewide enterprise architecture; with the anticipated high number of agreement-specific data requirements, this will be a large factor.
- SAP applications are designed based on specific functional and user interaction models and the state will have to accept that design.
- The State may not be able to maintain qualified staff resources to support the application.
- The SAP licensing formula is complex, requiring OFM staff to manage licenses and coordinate the acquisition of site licenses for agencies.
- The State will be required to implement all upgrades as a condition for SAP's continuing to provide support for the system.
- SAP charges upgrade license fees in addition to annual maintenance fees. The State will be obliged to pay these fees as upgrades are released, every 18 months.

- The State will incur license fees for both components regardless of how much of the components' functionality it is actually using.
- The State will pay maintenance fees based on the total licenses, whether the licenses are being used or not.
- Because there are different categories of SAP licenses, there is a risk of over- or under-paying for licenses actually being used.

7.4. COTS/Best-Of-Breed

The following list assumes selection of a product that meets functional and non-functional requirements. General risks specific to such a Best-of-Breed solution include:

- Some COTS applications are designed to handle all operational and financial management; may be challenging to disentangle for ERP integration.
- COTS applications are designed based on specific functional and user interaction models and the state will have to accept that design.
- The State's procurement process may not result in the selection of the most appropriate product.
- Flexibility in the system may allow agencies to use non-standard processes.

8. ANALYSIS AND RECOMMENDATION

8.1. Roadmap Solution Matrix

This matrix is intended to indicate the relative values of avoiding application change until statewide financials are in place, installing a temporary solution, or implementing a solution for the enterprise in the short term.

For this business solution, there is a need to act in the short term to replace an aging system (ECY) and automate a cumbersome manual system (CTED). There is no business nor financial advantage in implementing a temporary solution, since there is a viable solution that can serve the enterprise in the short term.

Solution	Wait for Statewide Financials	Temporary Solution	Enterprise Solution
1. Custom solution with PRISM design	•Aging and audit- non-compliant ECY system must be replaced before statewide financials •Short term CTED business need	No advantage to temporary solution: product should be compatible with enterprise solution	Possible within solution constraints; there is a better solution
2. SAP Enterprise Solution for Grants Management	•Aging and audit- non-compliant ECY system must be replaced before statewide financials • Short term CTED business need	N/A	Not possible to implement within solution constraints
3. Best of Breed COTS Solution	•Aging and audit- non-compliant ECY system must be replaced before statewide financials •Short term CTED business need	No advantage to temporary solution: product should be compatible with enterprise solution	Possible within solution constraints; recommended solution
Costs		N/A	See above

8.2. Recommendation

Based on a review of the business issues, the functional and non-functional requirements, project constraints, and cost benefit analysis, we recommend implementing a COTS/Best-of-Breed solution. Subject to the State's changing the requirements or project constraints, the team believes this alternative carries the most benefit with the least risk. The chart below summarizes the team's findings.

Criteria	Custom	SAP	COTS
Functional	- Built to fit - Configurable settings require greater development time	- High degree of fit - Greater degree of configuration	- Highest degree of fit - Built-in configuration, less reliance than SAP
Non-Functional	- Built to fit	Requires adapter strategy	- Simpler interfacing
Licensing/Fees	- none	- Enterprise (per seat) licensing - Requires MySAP CRM	- Enterprise licensing (one price for state-wide use)
Project Staffing (agency)	- Greater staffing for requirements and testing and implementation	- Larger staffing requirement - Higher priced resources	- Least staffing requirement
Project Schedule	- Meeting schedule will compromise function	- Longest implementation	- Meets schedule constraint
Project Costs	- Greatest risk of estimates	- Greatest project cost	- Meets cost constraint
Hardware/Software	- Built to standard configuration	- Uses proprietary language	- Use Wintel, Microsoft platform
Ongoing Staffing (agency)	- Developers	- Multiple specialists	- Administrators
Ongoing Costs	- Developer support	- Annual maintenance - Upgrade support	- Annual maintenance
Risks	- Development will delay deployment	- Greatest risk of failure	- Potential for having to un-bundle functionality
Pros	- Matches requirements	- ERP adherence	- End user robustness - Fastest implementation - Extensible
Cons	- Greatest development risk	- Time to implement - Ongoing support staffing - Must accept package design, i.e., UI, processes - Cost	- Ability to influence future functionality - Must accept package design, i.e., UI, processes

8.3. Further Recommendation

In addition to the solution recommendation, the team also recommends:

- Negotiate agreements "so that payments for the software license acquisition component are made on an as needed or the most cost effective basis".
- Negotiate agreements such "that software maintenance payments are based on the number of software licenses in use and not on the number of licenses acquired".
- In business cases for software acquisition, clearly identify and justify the type of users planned.
- Plan a preparation phase with a "best practices" business review as part of any COTS implementation:
  - Inventory programs and their schedules and forms/documents before implementation begins; set priorities for implementation.
  - Evaluate processes for high priority programs. Conduct an independent "benefits realization" study to ensure that best practices contained in the package are incorporated into Agency/State business processes through business process re-engineering.
  - Conduct a Privacy Impact Assessment in the early stages of system configuration:
    - Information access requirements vs. privacy requirements (legislated).
    - System Reconfiguration after implementation could be costly to accommodate privacy and access concerns.
- Develop a governance model which addresses State-wide requirements:
  - Implement a process to ensure that appropriate COTS modules are implemented.
  - There should be an evaluation of each purchased but unused module by appropriate staff.
- Ensure adequate operational and management reporting requirements are met for initial roll-out:
  - Include management exception reporting, routine expenditure analysis.
  - Caution that users will resort to maintaining supplemental records to support specific departmental reporting needs

Appendix A. Revision Log

Date	Description	Author
March 31, 2006	Document completed and distributed	Tom Babington / Gary Hudson / Carol Baque
April 4, 2006	Revise after OFM review: *p.9:* change wording of #1 – 3 *p.30:* add 3rd bullet item *p.32:* add totals in table *p.33:* change title in 2nd-last bullet item *p.50:* change hardware/software item in SAP column *pp33-50:* correct team references	Carol Baque

Appendix B. Anticipated Fit of Solution Alternatives

A chart (Excel Workbook with multiple tabs) with a description of the anticipated fit of the selected solution alternative is attached as a separate document.

Appendix C.Indicative Function Point Count

A Word document with the function point count is attached as a separate document.

Appendix D. CTED Benefit Calculation Worksheets

A chart (Excel Workbook with multiple tabs) with CTED benefit calculations is attached as a separate document.

Appendix E. ECY Benefit Calculation Worksheets

A chart (Excel Workbook with multiple tabs) with ECY benefit calculations is attached as a separate document.

Appendix F. DIS Feasibility Study Cost Benefit Worksheets

A chart (Excel Workbook with multiple tabs) with the cost benefit information required for a feasibility study is attached as a separate document.